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Environmental Protection
Agency

Office of Public Affairs
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Illinois Indiana
Michigan
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Ohio Wisconsin

U. S. EPA Proposes Clean-up Alternatives Lammars Barrel Factory Site

Beavercreek, Ohio March, 1998

This Fact Sheet Explains:

- site background
- residential well sampling
- health risks
- clean-up alternatives under consideration
- next steps
- how you can participate in clean-up decision making

Public Meeting

U.S. EPA will hold a public meeting to explain the EE/CA, or pre-clean-up study, including recent ground water and soil sampling results. U.S. EPA will also assess the public's interest in forming a Community Advisory Group. Representatives from U.S.EPA, Ohio EPA, and State and local health departments will be available to answer questions.

Thursday, March 26, 1998
7:00 pm
Beavercreek Counsel Chambers at City Hall
1368 Research Park Drive

Community Advisory Group

U.S. EPA will soon be making important decisions about how to address contaminated drinking water and how to best protect the drinking water for the future. U.S. EPA would like to offer residents the opportunity to form a Community Advisory Group, or CAG, to help U.S. EPA evaluate clean-up options and to make decisions that best consider community preferences. For more information on forming or participating in a CAG, please come to the public meeting.

Introduction

The U.S. Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (Ohio EPA) have completed a "pre-clean-up" study called an Engineering Evaluation/Cost Analysis (EE/CA) for the Lammars Barrel Factory site in Beavercreek, Greene County, Ohio. The purpose of the study was to evaluate the nature and extent of contamination associated with the site, and to evaluate clean-up alternatives for reducing risk. These alternatives are outlined below. Over the next several months, U.S. EPA and Ohio EPA, in cooperation with the Ohio Department of Health, will be evaluating these alternatives further and proposing an alternative(s) as the clean-up remedy.

Site History

The Lammars Barrel Factory site (also known as the Kohnen and Lammars Chemical Company) is located at 3990 East Patterson Road on the northeast corner of the intersection of Grange-Hall and East Patterson Roads, in Beavercreek, Greene County, Ohio. The company operated as a chemical recycling facility from 1953 until 1969. During its operation, the facility maintained above-ground storage capacity of over 500,000 gallons as well as a number of vertical tanks, several transport trucks and semitrailers, and approximately 6000 55-gallon drums. The site is located on a two acre parcel of land, and is divided into north and south portions by Little Beaver Creek. The facility burned to the ground in September, 1969.

Overview of Site Contamination

Ground Water - Ground water contamination extends from the site outward to the east, south, and southeast, potentially impacting some homes in the Valleywood Subdivision of Beavercreek. Contaminants of primary concern that exceed federal drinking water standards (known as Maximum Contaminant Levels or MCLs) in residential wells include several volatile organic compounds (VOCs) including trichloroethene, tetrachloroethene, and vinyl chloride. Exceedences of the standard of one or more of these contaminants have been found in a number of residential wells. All but three homes with exceedences are currently using county water for drinking water.

Soils - Soils on the site are contaminated with VOCs. Contamination in the on-site soils is considered to be the source of ground water contamination.

Overview of Residential Well Sampling

October 1985: Analyses of approximately 90 residential well samples throughout Beavercreek identified an area of ground water contamination along the northern end of the Valleywood subdivision. Sampling revealed the presence of VOCs in 15 wells. Because levels of a VOC called vinyl chloride was very high in some wells, the Ohio National Guard brought in a 350-gallon mobile water tank for emergency water supply to five homes along Patterson Road.

November 1985: The U.S. EPA began extension of municipal water lines to nine residences. Currently, county water mains extend down Grange Hall Road, East Patterson Road, Kenora Circle, the north end of Stanwick Drive, and Tralee Trial.

1986 through 1992: The Ohio EPA re-sampled a limited number of residential wells. In 1992, wells that were previously contaminated still contained chemicals, though levels had decreased somewhat.

March - August, 1997: The U.S. EPA conducted three rounds of sampling of a total of 54 residential wells. VOCs were found in 28 wells sampled, but only nine exceeded a federal drinking water standard (MCL). Five of the nine contained vinyl chloride and were connected to county water in 1985. The other four wells exceeded the standard for trichloroethene and one of four also exceeded the standard for tetrachlorethene. One of these residences has since been connected to the county water supply, and another has installed a full-house carbon filtration system. Although the levels of trichloroethene are above the federal drinking water standard, the health risks are considered to be low (see summary of health risks below). Therefore the U.S. EPA will not be taking any emergency measures to provide alternate water to the affected homes at this time. Sampling was also conducted for metals. While metals were detected in some of the wells sampled, levels were not found above federal drinking water standards.

For more detailed information about the residential well sampling and results, please consult the EE/CA located in the site information repository or contact any of the individuals listed below.

Summary of Health Risks

As part of the EE/CA, a risk assessment was conducted to assess the potential risks to humans and animals from contamination from the site. Three exposure pathways were evaluated for risk under *current* conditions: (1) direct contact with site surface soils and stream sediment by adolescent site visitors; (2) direct contact with these materials by adult site visitors; and (3) general residential use of ground water by nearby residents. Two potential *future* use scenarios were evaluated also: (4) direct contact with site surface soils by future site workers; and (5) use of site ground water as potable water for future site workers. Risks were calculated as shown on the table below.

U.S. EPA expresses the liklihood of any kind of cancer resulting from a Superfund site as a probability; for example,. 1×10^{-4} or a "1 in 10,000 chance." In other words, for every 10,000 people in the area, an extra cancer case *may* occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. U.S. EPA has established a cancer risk range (1×10^{-4} to 1×10^{-6} or "1 in 10,000 chance" to "1 in 1,000,000 chance") in an attempt to set standards for cleanup and human health protection. In general, as cancer risks increase beyond one chance in 10,000 U.S. EPA considers the cancer risk unacceptable.

For noncarcinogens (chemicals that may cause other health problems besides cancer such as organ damage, immunological effects, birth defects and skin irritation), U.S. EPA defines acceptable exposure levels as those exposures which would have no adverse effects during a lifetime. This acceptable exposure level is approximately represented by what is referred to as a hazard index (HI) of 1.0.

The risks associated with exposure to site contamination fall within U.S. EPA's acceptable range with two exceptions. Specifically, the risk associated with drinking water containing vinyl chloride falls outside the acceptable range (3). Also, the risk to future workers that might drink ground water from the site falls outside the acceptable cancer risk range (5). Notably, the risk for residential use of ground water contaminated with trichloroethene is well within the risk range for cancer and just within the range for non-cancer effects.

Summary of Cancer and Non-Cancer Risks for Current and Potential Future Exposures

Exposure Pathway	Cancer Risk	Non-Cancer Risk (Hazard Index)
(1) Teenage Trespassers	1.5×10^{-6}	0.0036
(2) Adult Trespassers	1.5×10^{-7}	0.0002
(3) Residential Use of Ground Water:		
Vinyl Chloride (all homes currently on county water)	9.2×10^{-3}	1.7
Trichloroethene (three homes not on county water)	6.5×10^{-6}	0.944
(4) Future Site Workers - Soil Exposure	2.0×10^{-6}	0.052
(5) Future Site Workers - Using Ground Water for Drinking Water	1.2×10^{-4}	0.26

Summary of Clean-up Alternatives

U.S. EPA is evaluating the following alternatives to address contamination on the barrel site and contamination of the residential wells.

Alternatives to Address Residential Well Contamination:

Alternative 1: No Action - This alternative is used as a baseline against which to compare other alternatives. No action is taken under this alternative. *Cost: $0*

Alternative 2: County Water Line Extension - This alternative would involve the extension of the county water lines from East Patterson, south along Richfield Center to Rockfield Drive, then east on Rockfield to Rosendale Drive, and then north on Rosendale to the three affected homes. An alternate route would involve extension of the lines through an alley on the east side of the Eagles Lodge and strip mall on Richfield Center to reach Rosendale Drive. This route would require an easement to access the alley and would traverse several backyards. *Cost: ~$190,000 for route one; ~$90,500 for route two.*

Alternative 3: Point-of-Entry Carbon Filters - This alternative would involve the installation of activated carbon filter units at the point-of-entry to the home. Contaminated water would pass through a sediment filter to remove particulates and then circulate through a carbon filter. When properly maintained, water exiting the unit would not contain any contaminants above federal drinking water standards. Cost: ~$5,700.

Alternative 4: Pump and Treat - In this alternative, contaminated ground water is pumped out of the ground from wells near the area of ground water contamination and treated to remove contaminants. Treated water would then either be pumped back into the ground, or discharged to a local river or creek, such as Little Beaver Creek. *Cost: ~855,000.*

Alternatives to Address the Contamination on the Site:

Alternative 1: No Action - This alternative is used as a baseline against which to compare other alternatives. No action is taken under this alternative. *Cost: $0*

Alternative 2: Soil Vapor Extraction - This technology applies a vacuum to remove contaminants in vapor form from the soil. *Cost: $1,000,000.*

Alternative 3: Low-temperature Thermal Desorption - In this alternative, contaminated soils are heated at relatively low temperatures (200 F to 900 F) so that those contaminants with low boiling points will vaporize. Once in vapor form, the contaminants are then collected and treated.
Cost: ~$1,700,000.

Alternative 4: Dual-Phase Extraction - This technology applies a high suction vacuum to remove both liquid and contaminants in vapor form from contaminated soils and ground water. Once collected, the vapors and ground water are separated and treated. *Cost: ~$950,000.*

Alternative 5: Air Sparging - In this technology, pressurized air is injected into the ground, causing the vaporization of contaminants. Once in vapor form, the contaminants are then collected and treated. *Cost: ~$940,000.*

Evaluating the Alternatives

U.S. EPA will use three criteria to compare the clean-up alternatives presented above and to recommend an alternative.

Effectiveness - considers the length of time needed to implement a clean-up alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Implementability - considers the technical and administrative feasibility of implementing the clean-up alternative, such as the availability of goods and services.

Cost - includes estimated capital, operation, and maintenance costs, as well as present worth costs. Present worth cost is an alternative's total cost over time in terms of today's dollars.

Next Steps

U.S. EPA, in cooperation with its State agency partners, will continue to evaluate the alternatives presented above. U.S. EPA will then propose one alternative to address ground water contamination and one alternative to address contaminated soil and present these alternatives to the public (at a public meeting) in a document called a Proposed Plan. The public will be asked to review the alternatives and provide U.S. EPA oral or written comments.

For More Information Contact:

Bri Bill, Community Involvement Coordinator
U.S. EPA (P-19J)
77 West Jackson Boulevard
Chicago, IL 60604
1-800-621-8431 or (312) 353-6646

Amy Gibbons Bohler, Site Manager
Ohio EPA, SW District Office
401 East Fifth Street
Dayton, OH 45402-2911
(613) 285-6357

Beth Reiner, Remedial Project Manager
U.S. EPA (SR-6J)
77 West Jackson Boulevard
Chicago, IL 60604
1-800-621-8431 or (312) 353-6576

Bob Frey, Geologist
Ohio Department of Health
246 North High Street
Columbus, OH 43266-01189
(614) 644-6447

A site information repository has been established at the Beavercreek Community Library located at 3618 Dayton-Xenia Road, Beavercreek.

United States Environmental Protection Agency
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